USING LAB AND PROCESS DATA TO HELP WITH PRETREATMENT ISSUES

TED SIMMONS
REGIONAL SALES MANAGER – SOUTHERN OHIO

OVERVIEW OF HACH COMPANY

- **Began in 1947 in Ames, IA**
- **1999: Acquired by Danaher Corporation**
- **Manufacturer of industrial and municipal water analysis solutions**
  - process and laboratory instruments
  - chemistries
  - service and software
- **Innovation leader**
  - 527 patents, 130 patent families
  - strong investment in R&D and acquired technologies

- **OUR MISSION**
  Ensure water quality for people around the world.

- **OUR VISION**
  We make water analysis better—faster, simpler, greener and more informative—via unsurpassed customer partnerships, the most knowledgeable experts, and reliable, easy-to-use products.

HACH
Be Right™

OVERVIEW OF HACH COMPANY

- **70+ RSM's**
  - Regional Sales Managers
- **25+ CAM - KAM – ADM – TSS - CSS**
  - CAM - Corporate Account Managers
  - KAM - Key Account Managers
  - ADM - Application Development Managers
  - TSS - Technical Sales Specialist
  - CSS - Complex Sales Specialist
- **100+ Field Service Technicians**
  - Field Service Partnerships
  - Startups, Commissioning and Training
- **41+ Technical Support Representatives**
  - Global Customer Support
- **12+ Bench Service Technicians**
  - Two service centers for repair and certification

HACH
Be Right™

INDUSTRIAL WASTEWATER

- Many different types of Industries produce Wastewater

  - Iron and Steel
  - Chemical plants
  - Refineries
  - Metal plating
  - Power Generation
  - Textile
  - Oil Refining/Petrochemical
  - Mining and Metals
  - Pulp & Paper
  - Microelectronics
  - Food & Beverage
  - Biopharmaceutical
  - Automotive
  - Bio-fuel/Alternative Fuel Plants

**52 industrial categories, 32 fall under pretreatment standards

WHY DO WE PRETREAT OUR WASTEWATER?

- Some Industrial plants need to pretreat the wastewater before discharging
- Discharging industrial wastewater can be done in several different ways
  - Onsite treatment plant for the wastewater and discharges to the receiving waters
  - Pretreatment facility to help pretreat the wastewater before sending to a POTW for further treatment
  - Storage of the wastewater for transportation of waste to a treatment plant

- It is ***ILLEGAL*** to discharge any hazardous waste through underground systems including septic tanks and dry wells.

WHY DO WE PRETREAT OUR WASTEWATER?

Depending on what the Industry is producing, Industrial wastewater can contain:

- Ammonia, Cyanide, phenols, etc
- Suspended and particulate solids
- Acids – hydrochloric and sulfuric acid
- Slurries, rock particles
- Metals
- High concentrations of BOD
- Organic waste
- Pesticides
- Pharmaceuticals
- Detergents
- Petro-chemicals

Wastewater can be very complex with different industries!

PULP AND PAPER

Water Treatment

- Chloride
- Hardness & Alkalinity
- Hydrazine
- Silica
- Sodium
- TOC
- Copper
- Zinc
- Chromium
- Manganese

Steam Cycle

- Ammonia
- Chloride
- Copper
- Hydrazine
- Iron
- Phosphate
- Silica
- Sodium
- TOC

Cooling Water

- Chloride
- Copper
- Hardness & Alkalinity
- Microbiology/ATP
- Molybdate
- Sodium

Production

- ABC Titrator

POWER INDUSTRY

Water Treatment

Chloride

Hardness & Alkalinity

Hydrazine

Silica

Sodium

TOC

Selenium

Copper

Zinc

Chromium

Manganese

Steam Cycle

Ammonia

Chloride

Copper

Hydrazine

Iron

Phosphate

Silica

Sodium

TOC

Cooling Water

Chloride

Copper

Hardness & Alkalinity

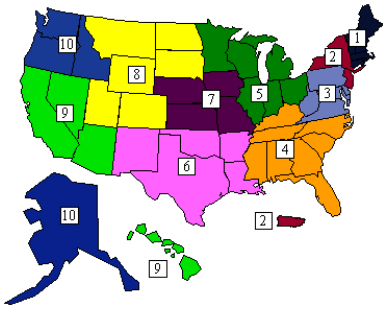
Microbiology/ATP

Molybdate

Sodium

PRETREATMENT REGULATIONS

- 3 Types of Regulatory Entities for Industrial Users (IUs)
  1. EPA
  2. Approval Authorities
  3. Control Authorities



HOW FAR DO YOU NEED TO GO?

Passive (watch) → **Active (control)**

Do Nothing	Grab Samples	Online Analysis	Data: Aggregate Analyze Report	Decision Support: Detect Diagnose Predict	Control/ Optimize Processes	Control/ Optimize Facilities

SERVICE

Lab Equipment/ Chemistries	Process Equipment	WIMS	Prognosys/ Sensor Verification	RTC	Fusion

HACH
Be Right™

THE LAB IS YOUR FRIEND (REALLY THEY ARE!!)

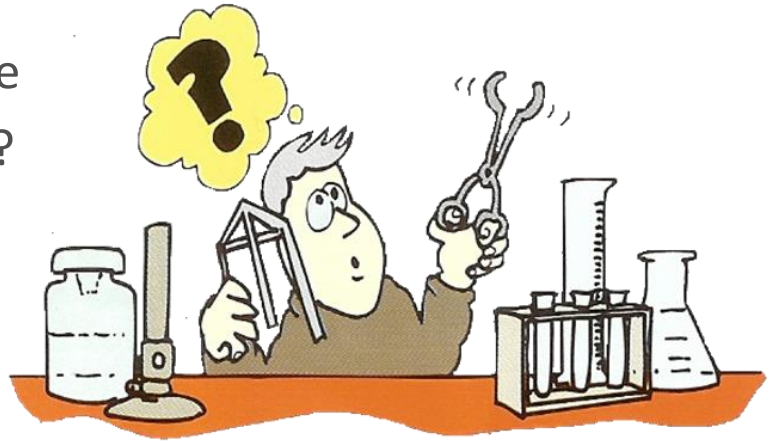
TESTING WASTEWATER CONSIDERATIONS
LAB VS PROCESS

- Can it be done in process or does it need to be done in a lab
- Proper sampling
  - Collect a good sample and enough volume for the tests
- Follow the approved method for the test
  - Find the easiest and most consistent test to follow
- Have the correct equipment to perform the test
- Have the trained people to run the test
- Have the correct chemistry and reagents for the test
- Regularly review your Standard Operating Procedures (SOP)

SELECTING THE RIGHT METHOD FOR YOUR LAB

Make sure that the procedure is correct for…

- Analyte
  - Nitrate vs. Nitrite
  - Total Phosphorus v. orthophosphate
  - Interferences particular to method?
- Concentration range
  - What is my expected result?
  - ppb vs. ppm
- Is this for compliance reporting?
  - Does it need regulatory approval?



PROBE STYLE LAB PARAMETERS

Parameter

- Temperature
- pH
- Conductivity
- Dissolved Oxygen
- Luminescent (LDO)
- BOD Sensor (with LDO)
- ORP/Redox
- Ion Selective Electrodes
  - Ammonia
  - Ammonium
  - Chloride
  - Fluoride
  - Nitrate
  - Sodium

HACH
Be Right™

BENCHTOP SPECTROPHOTOMETER WITH RFID* TECHNOLOGY

- VIS Spectrophotometer
- UV/VIS Spectrophotmeter
  - Guided Procedures
  - Eliminate False Readings
  - Hands Free Updates
  - Flexible Connectivity
    - 1 Ethernet
    - 3 USB
  - Sample Tracking w/RFID

HACH
Be Right™

EPA COMPLIANT METHODS

EPA Methods

Hach EPA Compliant Methods

EPA-Approved Methods

The EPA has evaluated and approved new technological methods developed by Hach Company. All EPA-Approved methods are cited in the Federal Register and compiled in the Code of Federal Regulations at 40 CFR 136 and CFR 141.

EPA-Accepted Methods

The EPA has reviewed Hach methods and accepted them for use in compliance monitoring. These methods are defined by EPA as Acceptable versions of previously approved methods. These methods are generally not published in the Federal Register or in the Code of Federal Regulations. A facsimile of the EPA- Acceptance letter is available upon request.

EPA-Equivalent Methods

All EPA-Approved methods have specification criteria built into their procedural steps. When an approved or accepted EPA method has been packaged by Hach from the EPA reference method as a test method that meets or exceeds these specification criteria, these methods are deemed to be equivalent for use in EPA compliance monitoring (40 CFR 136.6). EPA does not normally issue equivalence letters of packaged reference methods. Hach maintains the formulation, procedure, and data demonstrating equivalency and is available upon request.

Hach Approved Methods

These methods may be used for compliance monitoring. They have either obtained an EPA Approval or Acceptance letter, or the method is a packaged product that follows an EPA Reference method and is deemed Equivalent under 40 CFR 136.6. With any method used for compliance reporting, always consult with your local regulatory authority.

Analyte	Sample Matrix[1]	Hach Method	Approval Type	Reference Method	See Page
Acidity, as $CaCO_3$, Phenolphthalein, Buret	WW	8010	Accepted	SM 2310 B	12
Acidity, Phenolphthalein, Digital Titration	WW	8202	Equivalent	SM 2310 B	12
Alkalinity, Digital Titration	WW	8203	Equivalent	SM 2320 B, EPA 310.2	14
Ammonia as Nitrogen	WW	TNT830	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	16
Ammonia as Nitrogen	WW	TNT831	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	16
Ammonia as Nitrogen	WW	TNT832	Equivalent	EPA 350.1, EPA 351.1, EPA 351.2	16
Ammonia Nitrogen, Electrode	WW	10001	Equivalent	SM 4500-NH_3 D, E, F, or G	108
Ammonia Nitrogen, Known Addition, Electrode	WW	10002	Equivalent	SM 4500-NH_3 D, E, F, or G	108
Ammonia, as Nitrogen, Nessler	WW	8038	Accepted	SM 4500-NH_3 C	16
Arsenic, Total	WW	8013	Accepted	SM 3500-As B or C	18
BOD	WW	8043	Accepted	SM 5210 B	20
Calcium, Total, Buret	DW	8222	Accepted	SM 3500-Ca B or D	22
Calcium, Total, Buret	WW	8222	Accepted	SM 3500-Ca B or D	22
Chemical Oxygen Demand	WW	8000	Approved	40 CFR 136.3	32
Chemical Oxygen Demand, TNTplus	WW	TNT821/ 8000	Approved	Hach Method 8000, 40 CFR 136.3	32
Chemical Oxygen Demand, TNTplus	WW	TNT822/ 8000	Approved	Hach Method 8000, 40 CFR 136.3	32
Chloride, Mercuric Nitrate, Digital Titration	WW	8206	Equivalent	SM 4500-Cl C	24
Chloride, Silver Nitrate, Buret	WW	8225	Accepted	SM 4500-Cl B	24
Chloride, Silver Nitrate, Digital Titration	WW	8207	Equivalent	SM 4500-Cl B	24
Chlorine, Free, DPD	DW	8021	Accepted	SM 4500-Cl G	25
Chlorine, Free Amperometric Titration	DW	8334	Equivalent	SM 4500-Cl D	26
Chlorine, Free Amperometric Titration	WW	8334	Equivalent	SM 4500-Cl D	26
Chlorine, Total, DPD ULR	DW	8370	Accepted	SM 4500-Cl G	25
Chlorine, Total Amperometric Forward Titration	DW	10026	Accepted	SM 4500-Cl D	26
Chlorine, Free, DPD MR	DW	10245	Accepted	SM 4500-Cl G	28
Chlorine, Free, DPD MR	WW	10245	Accepted	SM 4500-Cl G	28
Chlorine, Free, DPD HR	DW	10069	Accepted	SM 4500-Cl G	26

[1]*DW – Drinking Water; SS – Sewage Sludge; SW – Surface Water; WW – Wastewater*

800-227-4224
Outside the United States, call 970-669-3050

HACH Be Right™

EPA APPROVED METHOD – DEFINITION

- **EPA-Approved Methods**
- The EPA has evaluated and approved new technological methods developed by Hach Company. All EPA-Approved methods are cited in the Federal Register and compiled in the Code of Federal Regulations at 40 CFR 136 and CFR 141.

EPA ACCEPTED METHOD - DEFINITION

- **EPA-Accepted Methods**
- The EPA has reviewed Hach methods and accepted them for use in compliance monitoring. These methods are defined by EPA as Acceptable versions of previously approved methods. These methods are generally not published in the Federal Register or in the Code of Federal Regulations. A facsimile of the EPA- Acceptance letter is available upon request

EPA – EQUIVALENT METHOD - DEFINITION

- **EPA-Equivalent Methods**
- All EPA-Approved methods have specification criteria built into their procedural steps. When an approved or accepted EPA method has been packaged by Hach from the EPA reference method as a test method that meets or exceeds these specification criteria, these methods are deemed to be equivalent for use in EPA compliance monitoring (40 CFR 136.6). EPA does not normally issue equivalence letters for packaged reference methods

TNTplus – Test 'N' Tube Chemistries

I) Vial and Reagents

DosiCap Zip containing stable freeze dried chemistry

Differentiation of ranges via Color coding

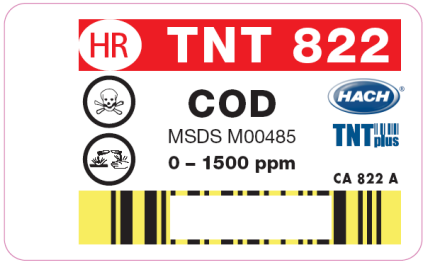
Strong brand recognition

Test name and (if so) safety information

Barcode for automatic test recognition

Exact amount of liquid reagent in vial

Freestanding 13mm vial due to flat bottom



Area for Sample ID

HACH
Be Right™

TNTplus – Test 'N' Tube Chemistries

II) Working Procedure in each box

Test, Parameter, Storage Conditions

Application range, safety information

Working Procedure w/ Pictogram

Principle and main interferences

HACH TNTplus

TNT 822

Chemical Oxygen Demand

0 – 1500 mg/L COD

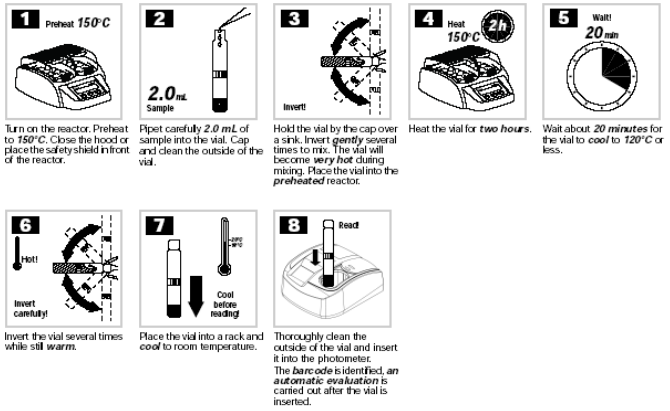
Temperature of sample/reagent: 15 – 25°C

Storage

Protect against light!

Special Notes (For more detailed information: HACH Procedure Manual)

- **Range of application:** For water and wastewater; digestion is required
- Some of the chemicals and apparatus used in this procedure may be ***hazardous to the health and safety of the user*** if inappropriately handled or accidentally misused.
- Wear ***appropriate eye protection and clothing*** for adequate user protection. If contact occurs, flush the affected area with running water. Follow instructions carefully.
- Close the hood or place a ***safety shield*** in front of the COD reactor to prevent injury if splattering occurs.
- The reagent mixture is ***light-sensitive***. Keep unused vials inside original closed box. Refrigerate if possible.
- Spilled reagent will affect ***test accuracy*** and is hazardous to skin and other materials. Wash spills with running water.



1 Turn on the reactor. Preheat to ***150°C***. Close the hood or place the safety shield in front of the reactor.

2 Pipet carefully ***2.0 mL*** of sample into the vial. Cap and clean the outside of the vial.

3 Hold the vial by the cap over a sink. Invert ***gently*** several times to mix. The vial will become ***very hot*** during mixing. Place the vial into the ***preheated*** reactor.

4 Heat the vial for ***two hours***.

5 Wait about ***20 minutes*** for the vial to ***cool*** to ***120°C*** or less.

6 Invert the vial several times while still ***warm***.

7 Place the vial into a rack and ***cool*** to room temperature.

8 Thoroughly clean the outside of the vial and insert it into the photometer. The ***barcode*** is identified, ***an automatic evaluation*** is carried out after the vial is inserted.

Principle	Interferences
The mg/L COD results are defined as the mg of O_2 consumed per liter of sample under conditions of this procedure. In this procedure, the sample is heated for two hours with a strong oxidizing agent, potassium dichromate. Oxidizable organic compounds react, reducing the dichromate ion to green chromic ion.	Chloride is the primary interference when determining COD concentration. Each COD vial contains mercuric sulfate that will eliminate chloride interference up to specified level (see table below).

TNT Test	Maximum Cl^- concentration in sample (mg/L)
TNT 822	2000

Note: *For more detailed information see the HACH Procedure Manual.*

HCPE822A / Druckfarbe schwarz / 1

822_TNT_plus_GB_F_E

HACH Be Right™

SUMMARY OF SIMPLIFIED NUTRIENT METHODS

- **Total Phosphorus**
  - 3 ranges that cover 0.010 – 60.0 mg/L PO_4--P
  - EPA compliant
- **Nitrate Nitrogen**
  - 2 ranges that cover 0.23 – 35 mg/L NO_3-N
  - Accepted as ATP
- **Nitrite Nitrogen**
  - 2 ranges that cover 0.015 – 6.0 mg/L NO_2-N
  - EPA compliant

Significant time, cost, and hazardous waste savings can be realized with new, efficient methods for compliance reporting

- **Simplified Total Kjeldahl Nitrogen (s-TKN)**
  - Range: 0 – 16 mg/L N
  - Easy 1 hr digestion in DRB 200 digital reactor (no special glassware)
  - Accepted as ATP
- **Ammonia Nitrogen**
  - 3 ranges that cover 0.015 – 47 mg/L NH_3-N
  - EPA compliant

EVERYTHING YOU NEED FOR COD TESTING

COD TNT, TNT+, Standards, etc.

ez COD Recycling Service

HACH
Be Right™

ANALYZERS AND PROCESS INSTRUMENTATION

WHAT IS THE PROCESS FOR PRETREATMENT?

- Analysis of contaminants in system
  - Know what is in the system for baseline data
  - What is the plant able to remove or pretreat
- Reports
  - Must submit reports that include flow and pollutant information
- Self-monitoring (permit dependent)
  - pH, cyanide, total phenols, oil & grease, sulfide, volatile organics: a minimum of 4 times/90 days
  - All other contaminants must be monitored on 24 hour flow or time based composite sampling

WHAT IS THE PROCESS FOR PRETREATMENT?

- Removal of contaminants
  - Methods used to help clean content of wastewater
    - API Separators
    - Chemical flocculation
    - Dissolved Air Flotation (DAF) and Induced Air Flotation (IAF)
    - Coalescing Cartridge type separators
    - Centrifugal devices
    - Coalescing Plate Separators
    - pH adjustment
    - Filtering
    - Reverse Osmosis
    - Stripping
    - Cooling or heating

ON-LINE PROCESS SENSORS AND ANALYZERS

- **Multiple Parameters**
  - Ammonia
  - Chlorine
  - Chlorine Dioxide
  - Conductivity
  - Dissolved Oxygen
  - Nitrate
  - Oil in Water
  - ORP
  - Ozone
  - pH
  - Phosphate
  - Sludge Blanket
  - Suspended Solids
  - Turbidity
  - Ultrasonic Flow
  - UVAS
  - 29 Parameters and more to come

HACH
Be Right™

WHY-AMMONIA/AMMONIUM?

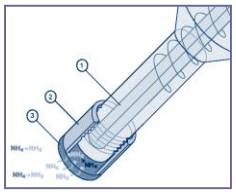
HACH
Be Right™

WHY MONITOR AMMONIA?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is important for your process or your controlling WWTP process

AMMONIA ANALYZER – ION SELECTIVE ELECTRODE

- 4 sample ranges
  - 0.02 – 5.00 ml/L NH4-N
  - 0.05 – 20.00 mg/L NH4-N
  - 1.00 – 100 mg/L NH4-N
  - 10 – 1,000 mg/L NH4-N
- Uses Gas Sensitive Electrode
- 5 – 120 minute measurement interval
  - Faster the interval…faster use of reagents



HACH
Be Right™

AMMONIUM SENSORS – ION SELECTIVE ELECTRODE

- Designed for municipal wastewater treatment plant applications with less than 30% industrial waste water
- Low cost ammonium probe for trending applications (5% accuracy)
- Onboard potassium electrode, reference & temp sensors ensure accuracy
- Sensors typically have one replaceable cartridge
- Optional air blast system to extend cleaning interval
- Range: 0.2 to 1000 mg/L NH4-N

HACH
Be Right™

AMMONIUM SENSORS – ION SELECTIVE ELECTRODE

Sensor cartridge
(only wearing part)

Sensor body

The sensor is ready for start up when the sensor cartridge is installed at the probe because the calibration data (sensor code) of the CARTRICAL calibration will automatically be transferred via RFID technology. No manual entry of the sensor code necessary.

HACH
Be Right™

WHY-AMMONIUM & NITRATE?

HACH
Be Right™

WHY MEASURE AMMONIA AND NITRATES?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is important for your process or your controlling WWTP process

AMMONIUM/NITRATE SENSOR – ION SELECTIVE ELECTRODE

- Low cost ammonium nitrate probe for trending applications (5% accuracy)
- Designed for municipal wastewater treatment plant applications with less than 30% industrial waste water.
- Onboard potassium electrode, reference & temp sensors ensure accuracy
- Sensors typically have one replaceable cartridge
- Optional air blast system to extend cleaning interval
- Range: 0.2 to 1000 mg/L NH4-N
- Range: 0.2 to 1000 mg/L NO3-N

HACH
Be Right™

AMMONIUM/NITRATE SENSOR – ION SELECTIVE ELECTRODE

ANISE sc

Sensor cartridge
(only wearing part)

Sensor body

The sensor is ready for start up when the sensor cartridge is installed at the probe because the calibration data (sensor code) of the CARTRICAL calibration will automatically be transferred via RFID technology. No manual entry of the sensor code necessary.

HACH
Be Right™

WHY-CHLORINE?

HACH
Be Right™

FREE OR TOTAL CHLORINE - COLORIMETRIC

CL17

- 0 - 5 mg/l
- DPD Technology
- Dependable, EPA Compliant,
- Not pH Sensitive

HACH
Be Right™

WHY-DISSOLVED OXYGEN?

HACH
Be Right™

WHY MEASURE DISSOLVED OXYGEN?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is important for your process or your controlling WWTP process
4. Monitoring for energy savings

LUMINESCENT DISSOLVED OXYGEN SENSOR

- Most Advanced DO Technology Available!
- Most Reliable DO Probe on the market today!
- Low Maintenance
  - No Membranes, Electrolyte, Anodes or Cathodes!
- Reduced Cleaning
  - Up to 5X Longer between cleanings
  - Cleaning can be further reduced with an air blast cleaning system!
- Reduced Calibration
  - Factory Calibrated
  - Calibration Only required at cap change out

HACH
Be Right™

WHY-NITRATE?

HACH
Be Right™

WHY MEASURE NITRATES?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is import for your process or your controlling WWTP process
4. Is nitrification positive or negative effect on your process?

NITRATE SENSOR – U/V LIGHT

- Measures Nitrate or Nitrate & Nitrite in Wastewater Effluent, Return Channel or Drinking Water
- Measuring Range (selectable)
  - 0.1 to 200 mg/L NO3
  - 0.1 to 50 mg/L NOx-N
- Self Cleaning!
- Measurement Interval
  - 1 to 30 minutes (user-selectable)

HACH
Be Right™

WHY-PH & ORP MEASUREMENT?

HACH
Be Right™

WHY MEASURE PH AND ORP?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is import for your process or your controlling WWTP process
4. Critical for DAF coagulant dosing
5. Monitoring for chemical savings
6. Monitoring for energy savings

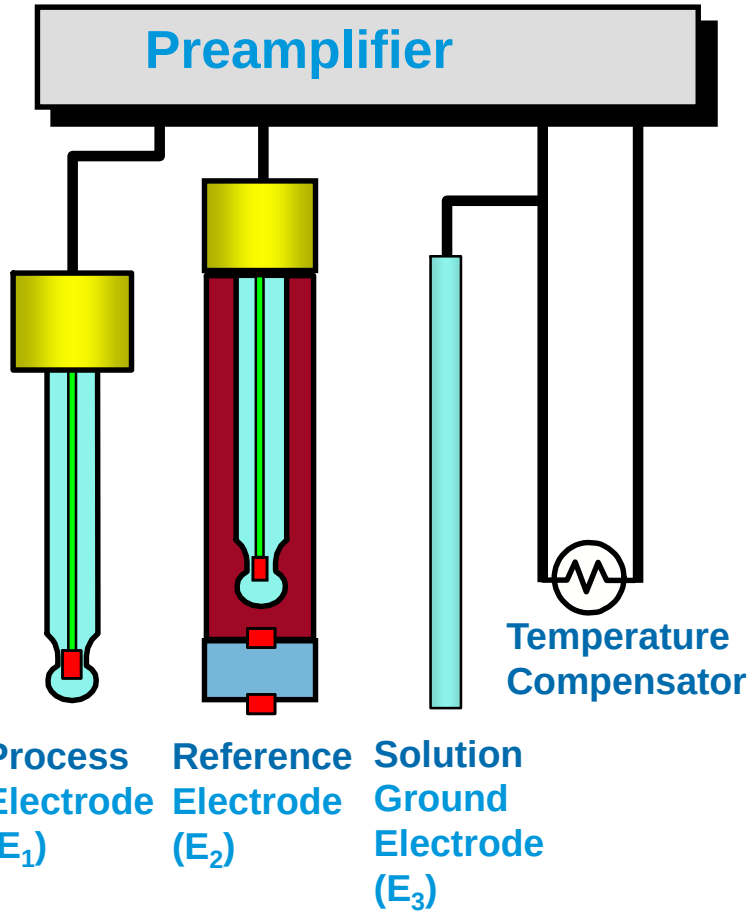
pH/ORP SENSOR – DIFFERENTIAL TECHNOLOGY

- Differential Technology
- Built for the toughest Industrial and Wastewater Applications!
- Replaceable Salt Bridge
- Rechargeable
- Reduced Maintenance Cost

HACH
Be Right™

PH MEASUREMENT

Differential Electrode Technique



$$\frac{E_1 - E_3 - (E_2 - E_3)}{(E_1 - E_2)}$$

WHAT'S INSIDE A PH SENSORS

Replaceable Salt Bridge

Measuring Electrode

Temperature Compensator

Ground Rod

Reference Electrode

Reference Solution Chamber

Conventional or Digital pre-amp

WHY-PHOSPHATE?

HACH
Be Right™

WHY MEASURE FOR PHOSPHATE?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is import for your process or your controlling WWTP process
4. Chemical addition for corrosion reduction

PHOSPHATE ANALYZER
COLORIMETRIC TECHNOLOGY

(1) 2-beam-LED-photometer with well proofed colorimetric method (yellow), two ranges

(2) Air pump to move liquids

(3) Dosing pump for reagent

(4) Cleaning solution

(5) Reagent

Range: 0.05 to 50mg/L PO4-P

HACH
Be Right™

WHY -SLUDGE BLANKET DETECTOR

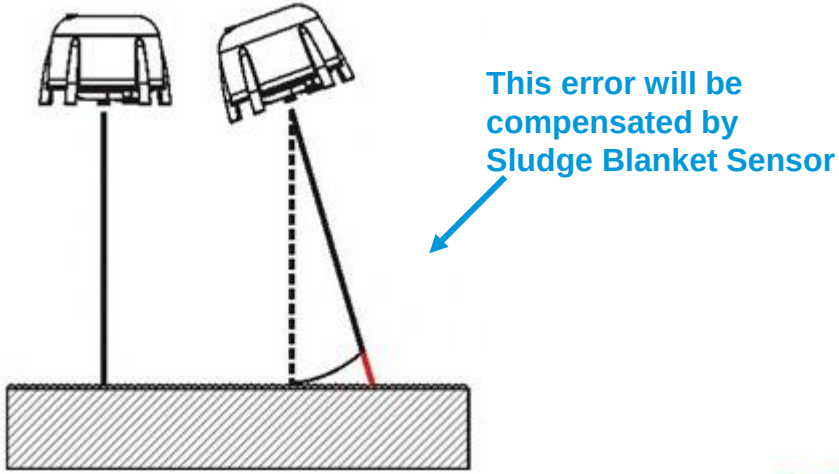
HACH
Be Right™

WHY MEASURE SLUDGE HEIGHT

1. It is on your permit (Probably Not!!)
2. It is on your controlling WWTP permit (Probably Not!!)
3. It is import for your process or your controlling WWTP process
4. Need to monitor solids in a clarifier
5. Labor savings

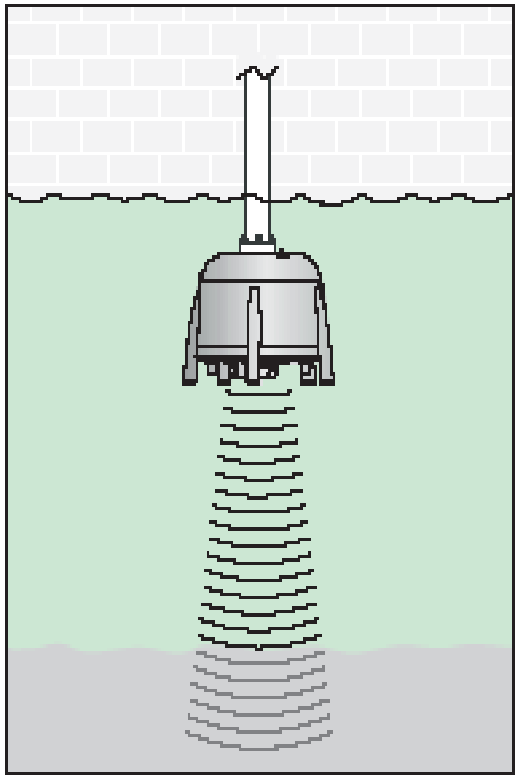
SLUDGE BLANKET DETECTOR SENSOR

- Position sensor compensates for angle of sensor when clarifier rake passes
- Sensor instantly resumes measuring after skimmer passes
- Position sensor compensates for angle when not mounted perfectly vertical.

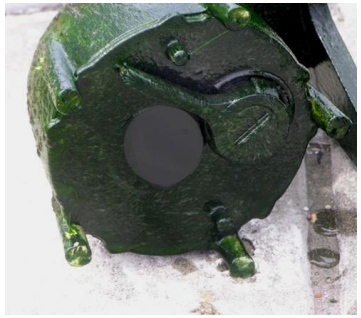


HACH
Be Right™

SLUDGE BLANKET DETECTOR SENSOR



- The Sludge Level Sensor uses ultrasonic pulses to accurately measure the sludge level
- An ultrasonic signal sent from the probe is directed towards the sludge blanket in the tank
- Height and depth measurements are based on the time it takes for the ultrasonic echo to return to the probe.



HACH
Be Right™

WHY -SUSPENDED SOLIDS & TURBIDITY?

HACH
Be Right™

WHY MONITOR SUSPENDED SOLIDS AND TURBIDITY?

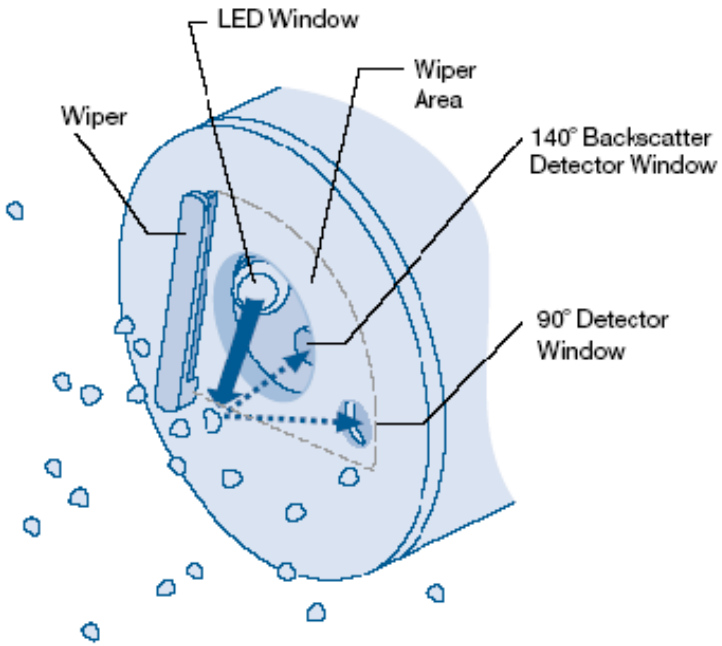
1. It is on your permit
2. It is on your controlling WWTP permit
3. It is import for your process or your controlling WWTP process
4. Understanding of your pretreatment process – is it working?
5. What is the quality of the effluent
6. Monitor chemical savings – is your polymer or coagulant working

SUSPENDED SOLIDS SENSOR – OPTICAL TECHNOLOGY

- Suspended Solids
  - **1 - 50,000 mg/L**
  - **Stainless Steel**
  - **Quartz Windows**
  - **90°& 140° Detection**
  - **ISO 7027 Method**
  - **Open Tank**
  - **Open Channel Applications**

HACH
Be Right™

SUSPENDED SOLIDS SENSOR – OPTICAL TECHNOLOGY



- Emits an infrared 860nm light which reflects off the particles in the water
- For suspended solids measurements, the reflected light is collected by the 140° detectors

HACH
Be Right™

TURBIDITY SENSOR – INSERTION OR INSITU

INFRARED LIGHT TECHNOLOGY

- Increases treatment plant efficiency with reliable, online monitoring
- Accurate, color-independent measurements
- A choice of probes to measure turbidity or both turbidity and suspended solids
- Self-cleaning probe prevents erroneous values
- Ultra-low maintenance
- Easy to install, with multiple mounting options

HACH
Be Right™

MEASURING ORGANICS
BOD, COD AND TOC

WHY-BOD AND COD?

HACH
Be Right™

WHY MEASURE COD?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is important for your process or your controlling WWTP process – food/ biomass ratio
4. Effluent impact to receiving waters – low oxygen demand

SCANNING UV SENSOR

Key Features:

- UV scanning probe
- 200 - 360 nm
- 254 pixels
- 0.8 nm / pixel
- Xenon flash lamp
- 0.3mm / 1mm / 2mm / 5mm / 10mm / 50mm path length
- Application specific software packages
- Comes with own CD500 Controller

WHY-TOC?

HACH
Be Right™

WHY MEASURE TOC?

1. It is on your permit
2. It is on your controlling WWTP permit
3. It is important for your process or your controlling WWTP process – food/ biomass ratio
4. Effluent impact to receiving waters – low oxygen demand
5. As an alternative to BOD or COD testing

TOC TN TP ANALYZER

System overview

- TOC TN, TOC TP and TOC TN TP models
- Analysis Ranges (broad combination available)
  - TOC: 0 – 50ppm to 0 – 20000ppm
  - TN: 0 – 19ppm to 0 – 15000ppm
  - TP: 0 – 11ppm to 0 – 5000ppm
- Number of Streams:
  - TN up to 6 plus manual,
  - TP up to 3 plus manual for TP
- Can handle soft particle up to 2mm,
- Cycle time: from 10 minutes
- Configurable for TIC & TOC or TC & VOC measurements, TOC results can be correlated to COD or BOD,
- Suitable for Hazardous Area installation

HACH
Be Right™

WHAT ELSE COULD YOU MEASURE?

THE EZ SERIES: ON-LINE WATER ANALYSIS MADE EASY

TITRATION

COLORIMETRY

VOLTAMMETRY

ION-SELECTIVE E.

CHEMILUMINESCENCE

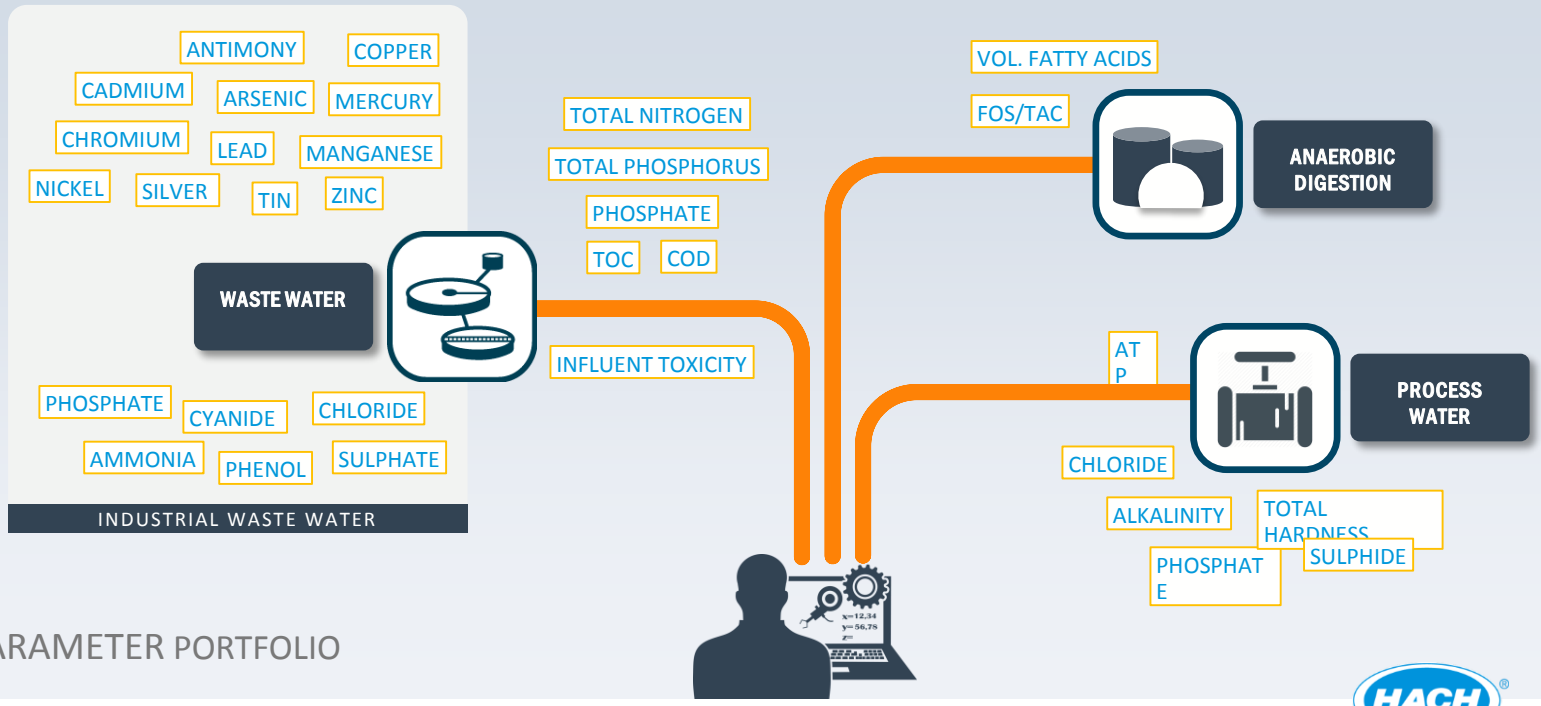
100+ PARAMETERS

EZ SERIES: AppliTek's advanced analyzer platform for on-line water analysis.

TECHNOLOGY PORTFOLIO

HACH Be Right™

EZ SERIES PORTFOLIO FOR THE INDUSTRIAL + MUNICIPAL MARKETS



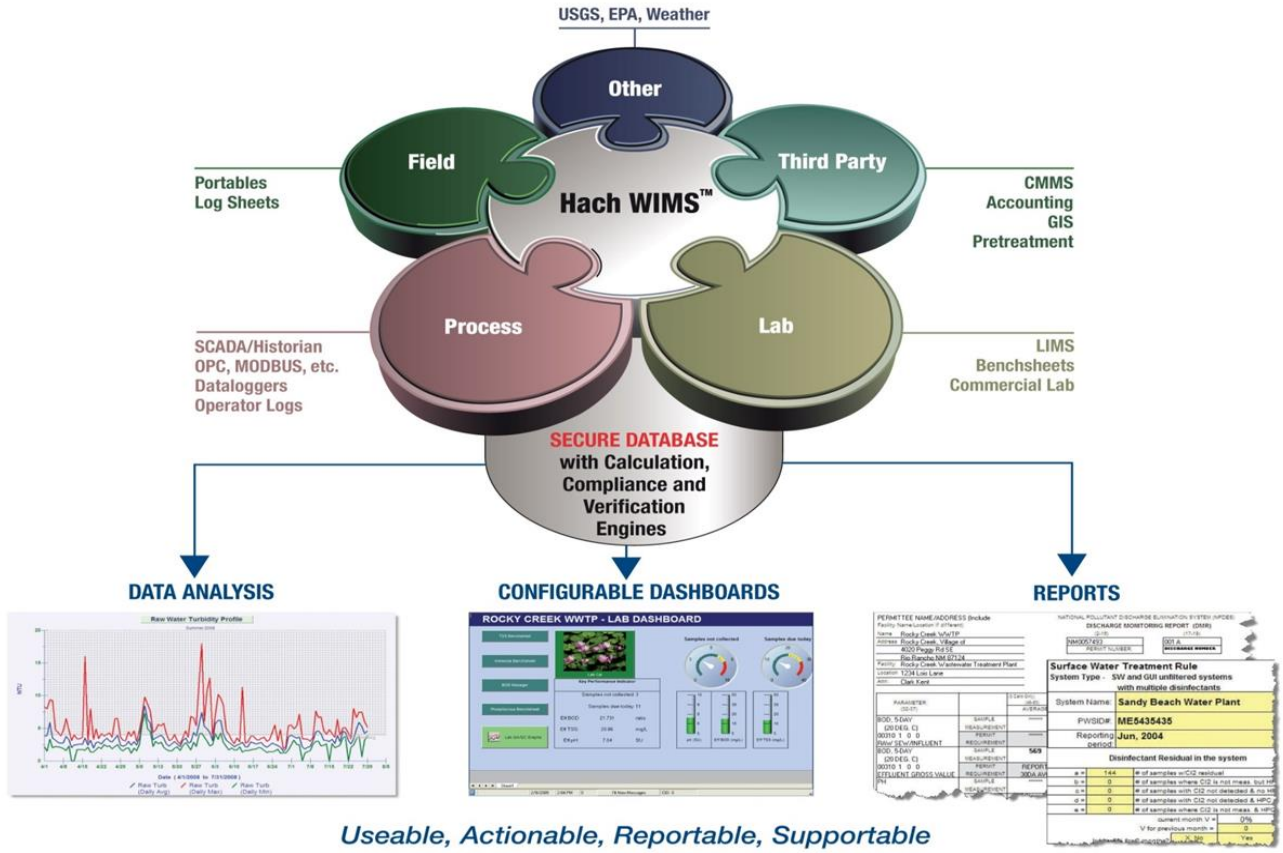
PARAMETER PORTFOLIO

NOW YOU HAVE ALL THIS DATA – WHAT DO YOU DO WITH IT????

WIMS BRINGS ALL YOUR DATA TOGETHER

Hach Water Information Management Solution™ (Hach WIMS™)

Accurate Information…Informed Decisions.



Useable, Actionable, Reportable, Supportable

HACH Be Right™

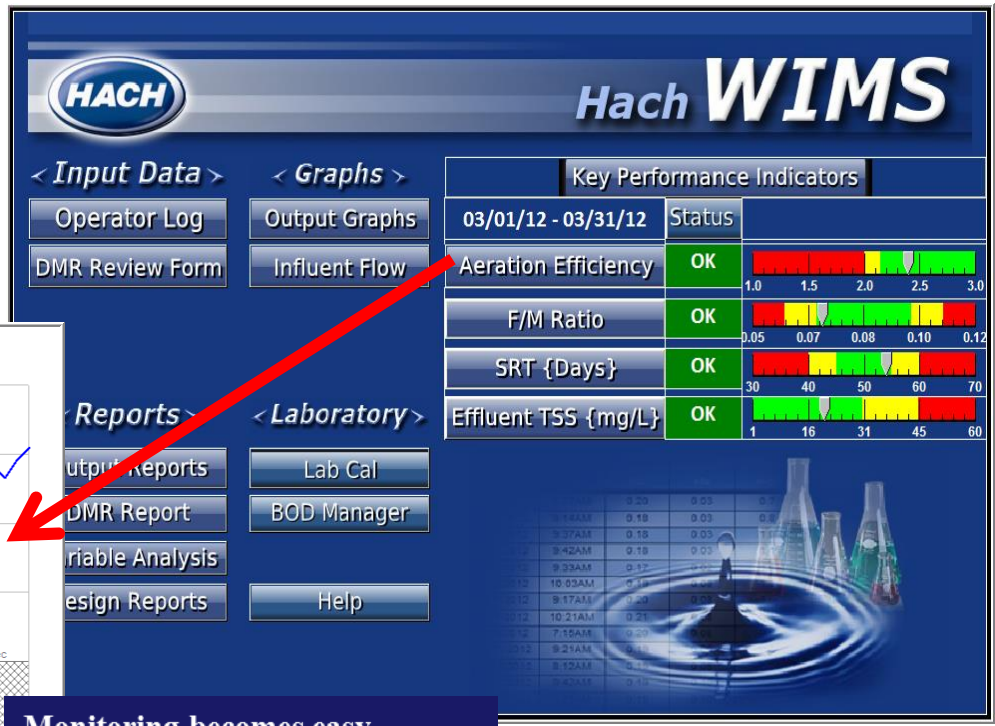
PROCESS OPTIMIZATION
SAVE ON CHEMICAL, ENERGY, AND WORKFORCE COSTS

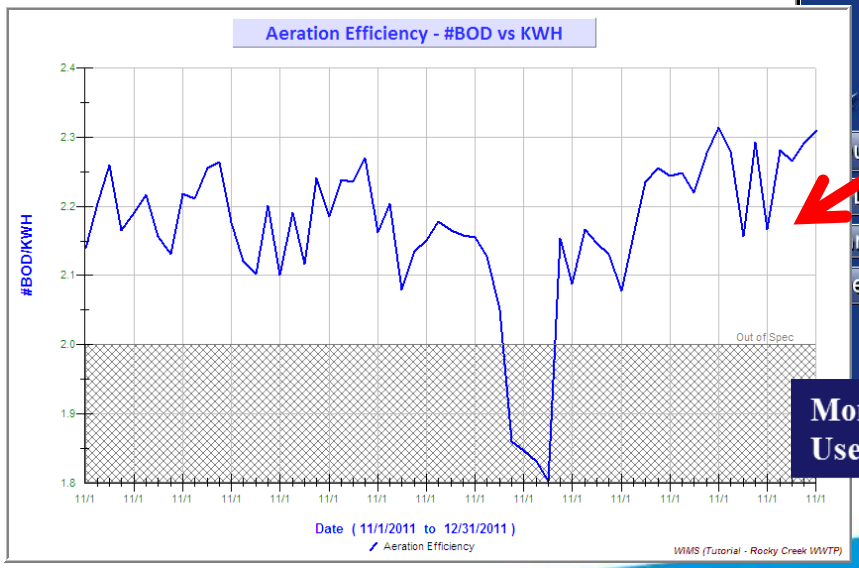
Results:

- Optimized cleaning cycle saves approximately 30% to 50% energy costs
- Improved diffuser maintenance and prolonged asset life
- More efficient maintenance lowering maintenance cost
- Remove BOD at designed capacity to ensure regulatory compliance

Sustainability:

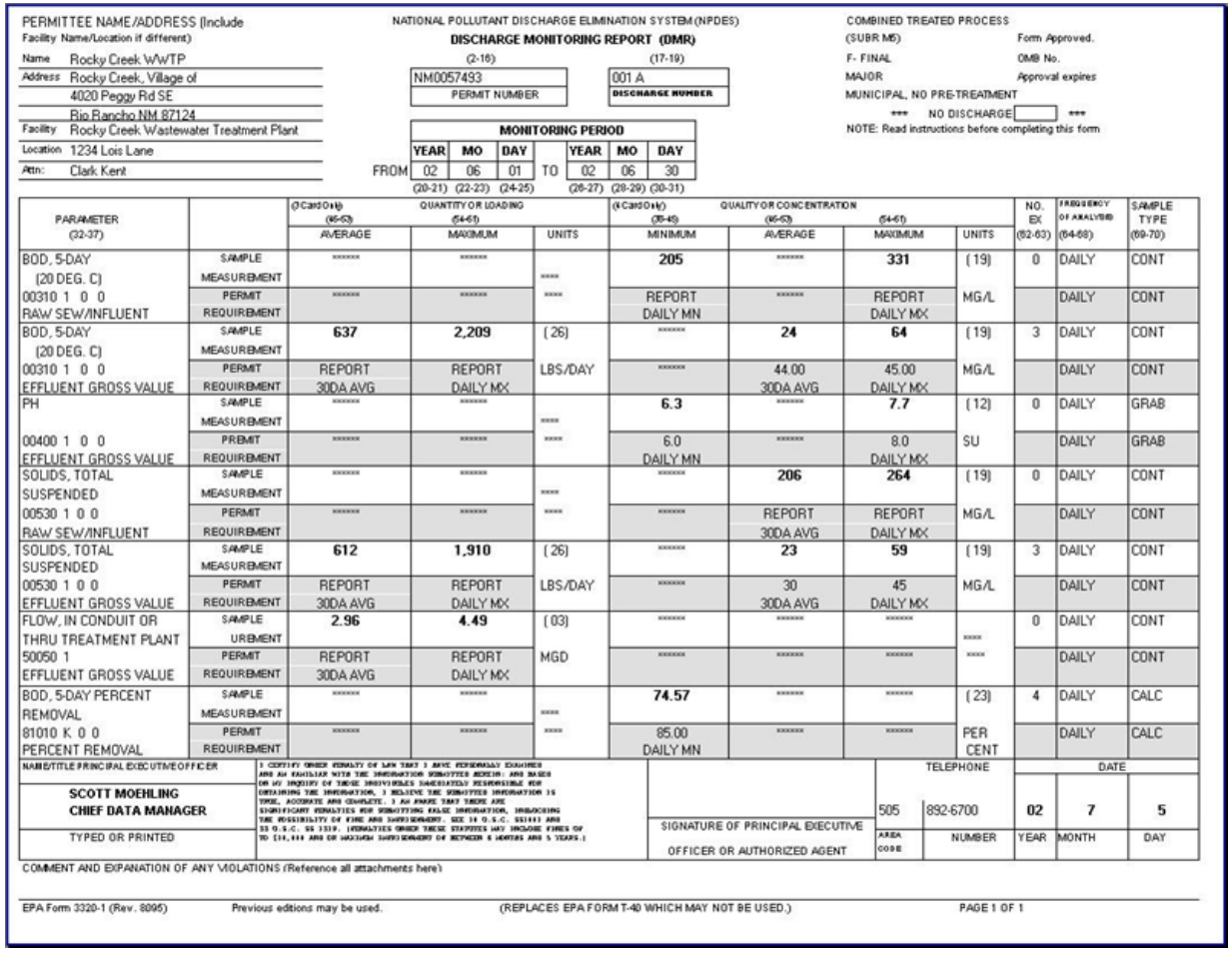
- Continuous monitoring and improvement via dashboards and email notification
- Making data-driven decisions
- Open communications





HACH Be Right™

REPORTING/E-REPORTING AND ANALYSIS WITH A PRESS OF A BUTTON



PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)
Name: Rocky Creek WWTP
Address: Rocky Creek, Village of
4020 Peggy Rd SE
Rio Rancho NM 87124
Facility: Rocky Creek Wastewater Treatment Plant
Location: 1234 Lois Lane
Attn: Clark Kent

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
DISCHARGE MONITORING REPORT (DMR)
(2-16) NM0057493 PERMIT NUMBER
(17-19) 001 A DISCHARGE NUMBER

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	02	06	01	TO	02	06	30
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

COMBINED TREATED PROCESS
(SUBR MB)
F- FINAL
MAJOR
MUNICIPAL, NO PRE-TREATMENT
*** NO DISCHARGE ***
NOTE: Read instructions before completing this form

Form Approved.
OMB No.
Approval expires

PARAMETER (32-37)		(9 Card Only) QUANTITY OR LOADING (55-63) AVERAGE	QUANTITY OR LOADING (54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (35-45) MINIMUM	QUALITY OR CONCENTRATION (46-53) AVERAGE	QUALITY OR CONCENTRATION (54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
BOD, 5-DAY (20 DEG. C)	SAMPLE MEASUREMENT	******	******	****	205	******	331	(19)	0	DAILY	CONT
00310 1 0 0 RAW SEW/INFLUENT	PERMIT REQUIREMENT	******	******	****	REPORT DAILY MN	******	REPORT DAILY MX	MG/L		DAILY	CONT
BOD, 5-DAY (20 DEG. C)	SAMPLE MEASUREMENT	637	2,209	(26)	******	24	64	(19)	3	DAILY	CONT
00310 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	LBS/DAY	******	44.00 30DA AVG	45.00 DAILY MX	MG/L		DAILY	CONT
PH	SAMPLE MEASUREMENT	******	******	****	6.3	******	7.7	(12)	0	DAILY	GRAB
00400 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	******	******	****	6.0 DAILY MN	******	8.0 DAILY MX	SU		DAILY	GRAB
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	******	******	****	******	206	264	(19)	0	DAILY	CONT
00530 1 0 0 RAW SEW/INFLUENT	PERMIT REQUIREMENT	******	******	****	******	REPORT 30DA AVG	REPORT DAILY MX	MG/L		DAILY	CONT
SOLIDS, TOTAL SUSPENDED	SAMPLE MEASUREMENT	612	1,910	(26)	******	23	59	(19)	3	DAILY	CONT
00530 1 0 0 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	LBS/DAY	******	30 30DA AVG	45 DAILY MX	MG/L		DAILY	CONT
FLOW, IN CONDUIT OR THRU TREATMENT PLANT	SAMPLE UREMENT	2.96	4.49	(03)	******	******	******	****	0	DAILY	CONT
50050 1 EFFLUENT GROSS VALUE	PERMIT REQUIREMENT	REPORT 30DA AVG	REPORT DAILY MX	MGD	******	******	******	****		DAILY	CONT
BOD, 5-DAY PERCENT REMOVAL	SAMPLE MEASUREMENT	******	******	****	74.57	******	******	(23)	4	DAILY	CALC
81010 K 0 0 PERCENT REMOVAL	PERMIT REQUIREMENT	******	******	****	85.00 DAILY MN	******	******	PER CENT		DAILY	CALC

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER
SCOTT MOEHLING
CHIEF DATA MANAGER
TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN; AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C. 1001 AND 33 U.S.C. 1319. (PENALTIES UNDER THESE STATUTES MAY INCLUDE FINES OF UP TO $10,000 AND OR MAXIMUM IMPRISONMENT OF BETWEEN 6 MONTHS AND 5 YEARS.)

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 505 | NUMBER 892-6700

DATE: YEAR 02 | MONTH 7 | DAY 5

COMMENT AND EXPANATION OF ANY VIOLATIONS (Reference all attachments here)

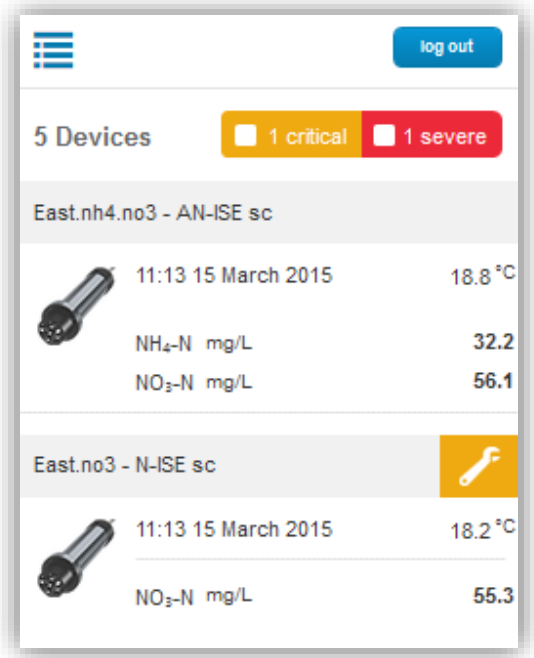
EPA Form 3320-1 (Rev. 8095) Previous editions may be used. (REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.) PAGE 1 OF 1

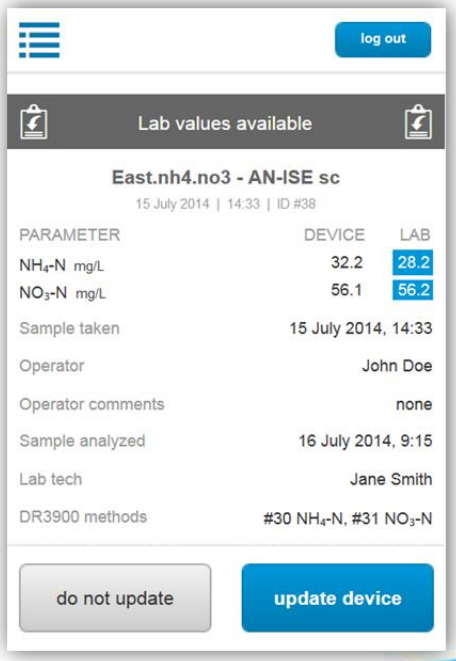
Transform data into knowledge using built-in reports and graphs… **including State/EPA required electronic reporting**

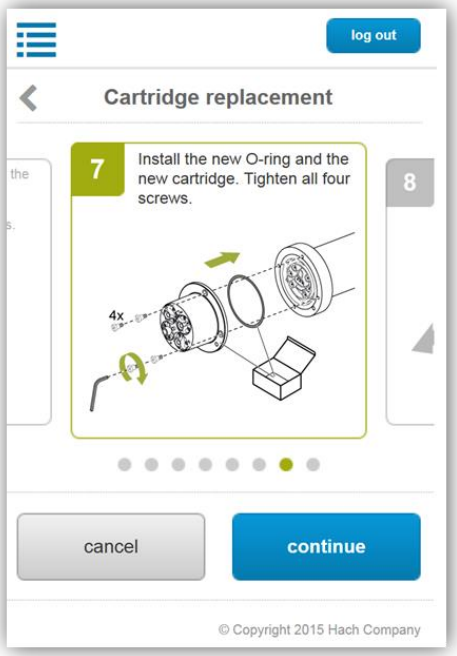
HACH Be Right™

MOBILE SENSOR MANAGEMENT

- Access to sensor information on your mobile device
- Proactive alerts about upcoming maintenance
- Verify and adjust process instrument measurement using laboratory measurements
- Step-by-step maintenance instructions







HACH
Be Right™

THANK YOU FOR YOUR TIME TODAY

HACH
Be Right™